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INHALED FOREIGN BODY AS A REASON OF LOBAR PNEUMONIA IN A 6,5 YEARS OLD BOY – CASE REPORT

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Abstract

We present a case of a foreign body as a reason for right lobar pneumonia in 6,5 years old boy. He was admitted in our hospital because of 6 day high fever (up to 40 ^{o}C**),** malaise, cough, stomach ache. Clinically he had impaired breathing in the basis of the right lung, and laboratory findings were with elevated inflammatory markers.

The radiogram of the chest showed round consolidation in the right low lung lobus. Microbiologicaly, we isolated Mycoplasma pneumonia (IgM) from pneumoslide, and also Staphylococcus aureus – MRSA from the sputum.

Additional immunology tests like immunoelectrophoresis (IgA, IgG, IgM) were done, all of them with results in normal ranges. After one week of therapy with parenteral rehydration, wide spectral antibiotics (according to antibiogram), inhalatory bronchodilatator and systemic corticosteroid, the child presented with scarce haemoptysis, with consecutive clear haemoptysis on the 10-th day.

This set for bronchoscopy and Mx-test with PPD5, which was negative. Flexibile bronchoscopy was made at 11th day of the stay, with visualized foreign body- grass like structure in the openings of the arm of middle and lower right bronchus. We continued with rigid bronchoscopy, with successfully removed grass- Hordeum murinum. After the intervention we observed completely clinical recovery of the lung findings, as well as radiological improvement

Key words: bronchoscopy, foreign body, Hordeum murinum

Introduction

Foreign body aspiration (FBA) is a major preventable cause of morbidity and mortality in children, being the fourth leading cause of accidental death in children younger than 3 years and the third in infants under 1 year [1]. Usually, male children of age less than three years are at high risk because of immature dentition, poor pharyngeal reflex, and a tendency to explore surroundings by mouth [2,3]. Nuts and seeds are commonly aspirated materials [4]. *Hordeum murinum* is a quite widespread and common specie of grass commonly known as wall barley or false barley. While it is rarely reported among the aspirated foreign body, it has high tissue penetration power and may cause lung damages [5]. Inadequate observation by adults, together with the tendency of children to explore the environment through their mouths, allows access to small objects, which sometimes results in aspiration [6].

The classical symptoms triad is sudden onset cough, followed by persistent cough and wheezing [7].

Some patients can be almost asymptomatic while others can show persistent cough, stridor, wheezing, cyanosis or even severe respiratory distress [8].

A chest X-ray is needed in addition to clinical symptoms and physical examination. For children who are admitted to hospital, the most appropriate choice of methods for removal of the foreign body is bronchoscopy.

The aim is to present a case of unexpected foreign body as a reason of lobar pneumonia with haemoptysis.

Case report:

In June 2022, a 6,5 years old boy was admitted in our hospital because of 6 day high fever (up to 40^{o}C**),** malaise, cough, stomach ache.

From the anamnestic data: The child had no prehistory of chronic diseases, allergies, or any other medical issues until this current condition. He was immunized according to our calendar of child immunization. The family history was also clear of significant diseases.

Clinically at admission, the child was with spastic cough, dyspnoea and wheezing. He had impaired breathing in the basis of the right lung, and bronchoopstruction bothsided, with regular vital parameters and regular oxygen saturation, without need for oxygen therapy.

Laboratory findings : elevated inflammatory markers (SE 75/110; CRP= 150 mg/l), with slightly elevated white blood cells with granulocytosis.

The radiogram of the chest showed round consolidation in the right low lung lobus, with no improvement of the next x-ray taken after a week of therapy.

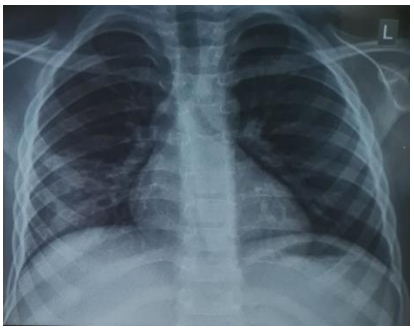

Figure 1. Chest X-ray on admission: Roumd consolidation in the right low lung lobus

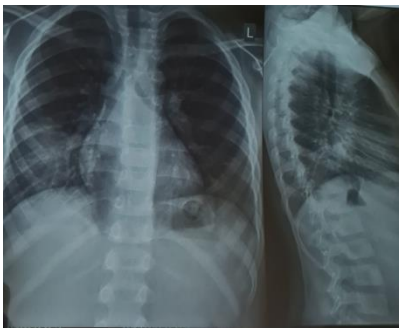

Figure 2. Chest X-ray 1 week after therapy: no improvement of the finding

Microbiologicaly, we isolated IgM Mycoplasma pneumoniae from pneumoslide, and also Staphylococcus aureus –MRSA from the sputum. Also, Sphingomonas paucimobilis was isolated from blood culture. Because of the several bacterial isolates, additional immunology tests like immunoelectrophoresis (IgA, IgG, IgM) were done and all of them were with results in normal ranges.

Therapy: parenteral rehydration, wide spectral antibiotics (according to antibiogram), inhalatory bronchodilatator and systemic corticosteroid was given with no clinical and radiological improvement.

After one week of therapy, the child presented with scarce haemoptysis, with consecutive clear haemoptysis on the 10-th day.

This symptom leaded us to do Mantoux-test with PPD5 to exlude tuberculosis, and it was negative.

After that we decided to do a bronchoscopy.

Flexibile bronchoscopy was made at 11th day of the stay, with visualized foreign body- grass like structure in the openings of the arm of middle and lower right bronchus. We continued with rigid bronchoscopy, and successfully removed grass – Hordeum murinum.

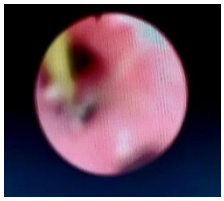

Figure 3. Fyberbronchoscopy: foreign body- grass like structure in the openings of the arm of middle and lower right bronchus

Figure 4. With rigid bronchoscopy removed grass – Hordeum murinum

After the intervention we observed completely clinical recovery of the lung findings, as well as radiological improvement.

Figure 5. Chest X-ray after intervention: radiological improvement

We like to emphasize that during the whole hospital stay mother of the child was denying any possibility of eventually inhaled foreign body. After the bronchoscopy, the father of the child admitted that his son while playing in the fields ate grass and additionally swimed in polluted waters.

This case is one story with happy ending of what easily would have become a tragedy for this child, with possible lung lobectomy if the grass was not been detected and removed successfully.

Discussion

This case represents a 6,5 years old boy with unexpected foreign body as a reason of lobar pneumonia with haemoptysis.

Foreign body aspiration is an underestimated problem. It is a preventable cause of morbidity and mortality in the pediatric population. The common findings in chest X-ray are air trapping/hyperinflation, atelectasis, consolidation, and pulmonary infiltration [4,9], like in our case.

A normal chest X-ray does not rule out the foreign body in the airway as there may not be any finding in the first 24 hours [10].

The type of foreign body varies in proportion across countries. While Sink et al. reported more than 50% of food pieces in the US [7], Zhong et al. found a large majority of plants in China [10]. The exact moment when the foreign body is aspired may be unnoticed by the parents. When FBA is suspected, based on clinical and physical data, a bronchoscopy is indicated even in the absence of radiological findings [11,12]. Hordeum murinum is the principal foreign body reported to lead to chest cutaneous fistula. It was described in 3 cases in children of 5, 12 and 13 years-old [13-15). In our case it was presented with lobar pneumonia, and was successfully removed, so it didn't cause complications.

Conclusion

This type of foreign body - Hordeum murinum is rare, and the aspiration often goes unnoticed. FBA is a major preventable life-threatening condition in children. Early diagnosis and treatment with bronchoscopy is essential to prevent the complications.

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